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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,725	12/29/2003	Patricia Chapman Irwin	134756-1	6638

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EXAMINER	
JACKSON, MONIQUE R	
ART UNIT	**PAPER NUMBER**
1773	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/747,725	IRWIN ET AL.	
	Examiner	Art Unit	
	Monique R. Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13,15,16 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13,15,16 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/29/07 has been entered.

2. Claims 1-11, 13, 15, 16 and 21-32 are pending in the application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

3. Claims 1, 3, 4, 9, 13, 15, 16, and 21-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Park et al (USPN 6,849,926) for the reasons recited in the prior office action and restated below.

Park et al teach a layer of an ultra low dielectric constant composite material or insulator containing nano magnetic particles and semiconductor devices using the low dielectric constant composite material layer wherein the material comprises an organic material such as polyimide (PI), epoxy, polymethylmethacrylate or methyl silsesquioxane, (reads upon "*thermosetting polymer*") and spherical or non-spherical nanoparticles having a maximum dimension of 5.8nm and consisting of Fe_2O_3, chromium oxide, europium oxide, NiZn-ferrite, MnZn-ferrite, yttrium-iron garnet (Abstract; Col. 2, lines 22-54; Col. 3, lines 55-67; Claims 1-2, 6-9 and 11-12.) Park et al teach that the thickness of the insulating layer is preferably at least one thousand times the maximum dimension of the nanoparticles, or 1000 times 5.8nm or 5.8microns reading upon (Claims 7 and 12.) Park et al teach that the non-spherical shape may include ellipsoid, needle,

plate or tetrahedral (Col. 3, lines 59-61.) Park et al also teach examples including 4.8wt% nanoparticles in PI cured by elevating the temperature stepwise from 150°C to 200°C to 300°C (*reads upon curing at a temperature of about 100°C to about 250°C*), and particular Ni-Zn ferrite nanoparticles suitable for the invention including $Ni_{0.5}Zn_{0.5}Fe_2O_4$ as instantly claimed (Col. 6; Table 2.) Park et al further teach that the composite material can be advantageously used as an insulator for a semiconductor device, for example, after interconnections are formed on a semiconductor substrate, the composite can be used to cover the interconnections (reads upon "*an electrically insulating layer disposed upon the electrical component*" as instantly claimed; Col. 9, lines 45-60.) With respect to Claims 21-23, the Examiner takes the position that the insulator taught by Park et al would inherently possess the same electrical properties as instantly claimed considering the insulator taught by Park et al comprises the same materials and content as the instantly claimed invention. With respect to Claim 29, the Examiner notes that the recited mica is not positively claimed as part of the invention considering mica is an alternative filler material in Claim 28.

4. Claims 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Laurent (USPN 4,390,596) for the reasons recited in the prior office action and restated below.

Laurent teaches encapsulating an electronic component in a molding mixture comprising (a) a thermosetting prepolymer as generally described at Col. 2, line 53-Col. 3, line 4; (b) a free-radical polymerization initiator; and (c) up to 80wt%, preferably 10-75wt%, of the weight of the molding mixture of mineral filler of fine particle size, such as mica, talc, calcium carbonate, alumina, or silica, having a particle size of between 0.1 and 200 microns wherein 0.1 micron or 100nm reads upon the claimed particle size range, "up to 80wt%" fully encompasses the claimed

weight content, and 10wt% falls within the claimed weight content range of the nanosized filler (Abstract; Col. 2, line 53-Col. 3, line 6; Col. 8, line 59-Col. 9, lines 6.)

5. Claims 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Keane et al (USPN 4,493,873) for the reasons recited in the prior office action and restated below.

Keane et al teach a corona-resistant, insulating composition and electrical conductors insulated therewith, such as a copper wire, wherein the insulating composition comprises polyimide, polyamide, polyester, polyamideimide, polyesterimide, or polyetherimide (*reads upon "thermosetting polymer"*) and from about 1 to about 35% by weight of dispersed alumina particles of a finite size less than 0.1 micron (100nm), preferably 0.005 to 0.050 micron (reads upon "nanosized filler") wherein a coated wire can be prepared by coating a dispersion of the alumina particles in the resin onto the wire and curing at a temperature between about 330°C to 370°C under conventional conditions (Abstract; Col. 3, lines 30-50, Col. 4, lines 13-41.)

6. Claims 28-31 are rejected under 35 U.S.C. 102(a) or (e) as being anticipated by Fujimaru et al (USPN 6,783,828) for the reasons recited in the prior office action and restated below.

Fujimara et al teach a resin composition suitable for use as an adhesive for semiconductor devices wherein the resin composition comprises 5-50wt%, preferably 7-30wt%, of inorganic particles having a mean particle size of 0.1 micron or less (100nm or less), and may be spherical, elliptical, flake, rod-like or fibrous; and a phase separated resin with a thermosetting resin content of 0.1 to 80wt% (Abstract; Col. 2, lines 60-65; Col. 3, line 1-Col. 4, line 18; Col. 7, lines 1-30; Col. 8, lines 23-45.) Fujimaru et al teach that the inorganic particles may be glass, alumina, zirconia, magnesia, silica, anorthite (comprises calcium oxide), zinc oxide, mica, calcium carbonate, or other ceramic powders or glass as listed at Col. 3, lines 28-Col. 4, lines 7.

Fujimaru et al also teach that adhesive composition applied to a conductive film (reads upon claimed "electrical component") or may be formed into a sheet, laminated on one surface to a copper-laminated TAB tape with wiring, an integrated circuit is bonded on the other surface of the sheet, and is then cured at 120 to 180°C (Col. 8, lines 23-54.)

7. Claims 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2002064276A (JP'276A) for the reasons recited in the prior office action and restated below.

JP'276A teaches a thermosetting resin composition useful for coating electronic parts or as the insulating layer in a printed wiring board, wherein the composition comprises a thermosetting or photosetting resin and 0.01 to 5 weight % of inorganic filler, such as silica, having an average particle diameter of 5nm to 0.5 microns to 100 weight % of the resin component (Abstract.) JP'276A teaches that the type or class of inorganic filler is not limited, though silica is desirable, and that when the composition is used as a resin insulation of a wiring substrate, the particle size is desirably 7nm-300nm, particularly 10-100nm (Paragraph 0025.) JP'276A teaches that the thermosetting resin is preferably a phenolic resin or epoxy-modified phenolic resin (Paragraphs 0009-0015.) JP'276A also teaches that the resin composition may be applied to a conductor by spin coating on a substrate, for example, after forming a circuit thereon, or a double-sided copper-clad substrate as in the examples, or may be used as an insulating layer for protection of a chip; and further teach inventive examples at 0.25, 0.5, and 0.75 wt parts, as well as comparative examples, at 10wt parts and 20wt parts, of 70nm silica to 98 wt parts resin, that read upon the claimed invention (Paragraphs 0032-0041; Examples.)

Claim Rejections - 35 USC § 102/103

8. Claims 1, 3-9, 13, 15, 24, and 27-31 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sakurai et al (USPN 6,869,683) for the reasons recited in the prior office action and restated below.

Sakurai et al teach an electromagnetic wave absorber for use in shielding electronic components from electromagnetic (EM) waves, wherein the EM absorber comprising an EM-absorbing layer having an EM-absorbing filler dispersed in a silicone resin on one or both surfaces of an EM-reflecting layer having an electrically conductive filler dispersed in a silicone resin wherein the EM-absorbing layer has a volume resistivity of at least $10x10^2$ Ω-m, particularly when in direct contact with an electronic component (*wherein the Examiner takes the position that the electronic component to be shielded or the EM-reflecting layer read upon "an electrical component" and the EM-absorbing layer reads upon "an electrically insulating layer disposed upon the electrical component"; Abstract; Col. 8, lines 38-45; Claim 1.*) Sakurai et al teach that the uncured silicone resin is preferably an organopolysiloxane having a degree of polymerization of 100 to 100,000, especially 100 to 2,000, and a structure as shown by formula (1) and described at Col. 4, lines 28-67, wherein the curing agent may be an addition reaction curing agent or a peroxide curing agent (*reads upon Claims 5-8*; Col. 4, line 28-Col. 6, line 29.) Sakurai et al teach that the EM-absorbing layer comprises 5 to 80% by volume of electromagnetic wave absorbing filler including ferrite particles such as $MnFe_2O_4$, $CoFe_2O_4$, $NiFe_2O_4$, $CuFe_2O_4$, $ZnFe_2O_4$, Fe_3O_4, Cu-Zn ferrite, Ni-Zn ferrite and Mn-Zn ferrite, having a mean particle size of about 0.1 microns (100nm) to 100 microns, in flat or granular shape (Col. 7, lines 1-44.) Hence similar to the calculation made by the Applicants in the last response, the

Examiner takes the position that 5% by volume of the ferrite particles taught by Sakurai et al would fall within the instantly claimed weight percentage ranges or read upon the claim endpoint of "about 15wt%" given the density of the ferrite particles and silicone resin disclosed by Sakurai et al and hence one skilled in the art would clearly envisage the claimed invention.

9. Alternatively, one skilled in the art at the time of the invention would have been motivated to utilize any of the EM wave absorbing filler materials taught by Sakurai et al at a particle size of 100nm and an amount as low as 5% by volume utilizing any commercially available ferrite material or silicone resin which would obviously result in a weight percent that would fall within the claimed range.

Claim Rejections - 35 USC § 103

10. Claims 10, 16, 25, 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai et al. The teachings of Sakurai et al are discussed above. To improve the wettability of the filler particles, Sakurai et al teach that a surface treating agent for the fillers may be added to the silicone resin wherein conventional surface treating agents may be used (Col. 6, lines 30-37) but do not specifically teach that the surface treating agent is a silane as instantly claimed. However silane coupling agents or silane surface treating agents such as the silanes listed in Claim 11 are known conventionally utilized surface treating agents in the art to improve dispersibility or wettability of inorganic oxide particles mixed into resins, particularly silicone resins, and hence would have been obvious to one having ordinary skill in the art at the time of the invention for use in the invention taught by Sakurai et al. With respect to Claims 16 and 32, though Sakurai et al teach that Ni-Zn ferrite particle may be utilized, Sakurai et al do not specifically teach $Ni_{0.5}Zn_{0.5}Fe_2O_4$. However one having ordinary skill in the art at the time of the

invention would have been motivated to utilize any Ni-Zn ferrite wherein equal amounts of Ni and Zn would have been obvious to one having ordinary skill in the art at the time of the invention. With respect to Claim 25, Sakurai et al do not specifically teach the coating method for producing the EM-absorbing layer however one skilled in the art at the time of the invention would have been motivated to utilize any conventional coating method including those as instantly claimed. Lastly, with respect to Claim 26, though Sakurai et al teach that the two layers may be cured together or separately, Sakurai et al do not specifically teach the curing temperature. However, Sakurai et al teach an example utilizing a curing temperature of 120°C, and hence, one skilled in the art at the time of the invention would have been motivated to utilize a curing temperature as in the example or to utilize routine experimentation to determine the optimum curing temperature based on the silicone resin and curing agent utilized, with temperatures close to the disclosed temperature of 120°C being obvious.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. The teachings of Park et al are discussed above. Though Park et al teach that the composite material can be advantageously used as an insulator for a semiconductor device, for example, to cover interconnections formed on a semiconductor substrate, Park et al do not specifically teach that the interconnections are copper. However, copper is an obvious species utilized in the art, and the most common, for forming interconnections in the semiconductor art and hence would have been obvious to one having ordinary skill in the art at the time of the invention.

Response to Arguments

12. Applicant's arguments filed 6/29/07 have been fully considered but they are not persuasive. The Applicant has amended the claims to recite that the electrical component is

"selected from an electrical conduction winding, stator bar or a stator piece for an electrical device...wherein the electrical device is an electrical motor or generator", however, the Examiner notes that these limitations do not add any structural or material limitations to the broadly claimed article and hence are viewed as intended use only. Given that the articles taught by the prior art are capable of being used in some manner in an electrical motor or generator, the Examiner maintains her position that the inventions taught by the prior art read upon the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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September 17, 2007